Recovery Plan Action Status

Plan Name: Apalachicola Plants (4 spp.)
Plan Status: Final
Plan Date: 22-Jun-94
Lead Agency: USFWS
Lead Office: Panama City Ecological Services Field Office
((850) 769-0552)

Species	Action Priority #	Action #	Action Description	Action Status	Est. Initiation Date	Est. Completion Date	Responsible Parties	Work Type	Labor Type	Action Comments

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Godfrey's butterwort (Pinguicula ionantha), Florida skullcap (Scutellaria floridana), White birds-in-a-nest (Macbridea alba), Telephus spurge (Euphorbia telephioides)	2	1.1	Management/monitoring in Apalachicola National Forest (AN)	Ongoing Current	FY 1995 - FY 1999		U.S. Forest Service	Management: General	Internal Field Assistance	Monitoring cost only. Management cost has not yet been determined. Management is an ongoing action conducted by the Forest Service. The ANF has a yearly 120,000+ acre prescribed burning program. According to L. Kirn (2009, pers. comm.), two to three compartments, i.e., management units,burned every year during the growing and dormant seasons. The ANF has an on-going timber-related management/monitoring study in the Hunt Timber Sale: pre- and post-harvest survey data have been collected in two sites (L. Kirn, 2009, pers. comm.). In addition, several years of monitoring data (e.g., documenting presence/absence in each population, and qualitative visual estimate of the density of white-birds-in-a-nest) have been collected in three permanent plots. However, these data were not available for evaluation. Macbridea alba is found scattered under the Apalachicola National Forest Utility ROW of SR 65. Protective measures have been established with Talquin

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										Electric during annual maintenance and the upcoming pole replacement.

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White birds-in-a-nest (Macbridea alba)	2	1.21	Macbridea alba population biology in ANF	Ongoing Not Current	Prior to FY 1995		U.S. Fish and Wildlife Service, U.S. Forest Service	Research: Demographic Studies, Research: Habitat Requirements, Research: Other Information	Graduate Student, Species Expert	Underway by Joan Walker and Deborah White. Demographic data from 11 populations monitored for 10 years indicate that mortality is low, flowering decreases with time since fire, and seedling establishment is rare. Seed bank studies were conducted. Results indicated that a significant percentage of seeds lack dormancy, therefore no persistent seed bank. Pitts-Singer, HAnula, & Walker (2002) study on pollinators indicated that bumble bees were the only visitor large enough to contact the reproductive structures of the flower. Studies of germination and seed bank, one aspect of population biology, have been conducted by Schulze et al. (2002). Since seed production has been documented for this species, but seedlings have rarely been observed in natural populations, the authors investigated the viability of dry-stored and of experimentally buried seeds, the

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										timing of germination, and whether a persistent seed bank was present. The authors observed in the field that seeds germinated while in the infructescences (the fruiting stage of the inflorescence), suggesting that the matured ovules lack dormancy, in addition to the possibility of viviparous seedlings. About 87% of dry-stored seeds were viable (or germinable) for six months after dispersal, but viability of dry-stored and of buried seeds was insignificant after one year. They concluded that a persistent seed bank is not present, based on the lack of emergence of seedlings from soil that was field collected prior to seed dispersal. This lack of seed dormancy and seed bank means that if the established individuals are eliminated, a population cannot re-establish itself. In addition, preserving genetic diversity in an ex-situ facility is not recommended due to the poor viability of dry-stored seeds. In general, Schulze et al. (2002) recommend preserving and protecting established individuals

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Godfrey's butterwort (Pinguicula ionantha), Florida skullcap (Scutellaria floridana), White birds-in-a-nest (Macbridea alba), Telephus spurge (Euphorbia telephioides)	3	2.1	Develop a regional report on right-of-way management in coastal savannah regions	Not Started			U.S. Forest Service, The Nature Conservancy, Florida Department of Transportation, Contractor	Management: Habitat Maintenance and Manipulation	Contract	
Godfrey's butterwort (Pinguicula ionantha), Florida skullcap (Scutellaria floridana), White birds-in-a-nest (Macbridea alba), Telephus spurge (Euphorbia telephioides)	3	2.2	Experiment with right-of-way management	Not Started			U.S. Fish and Wildlife Service, U.S. Forest Service, Florida Department of Transportation, Utilities, Florida County Road Department	Management: Habitat Maintenance and Manipulation	Internal Field Assistance	

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Godfrey's butterwort (Pinguicula ionantha), Florida skullcap (Scutellaria floridana), White birds-in-a-nest (Macbridea alba), Telephus spurge (Euphorbia telephioides)	2	3.1	Secure protection for the 4 plants outside AN	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Private landowners, Landowners and Managers	Acquisition	Internal Technical Assistance	Protections off of ANF for telephus spurge include: RGP and North Glades on PCB (St Joe easements) and Shallow Reed Site conservation easement in Gulf County. Other lands that at least one of these 4 include Tates Hell SF, Lathrop Island (BLM and St Joe private), Brenda Ward private landowners has a few skullcaps, St Joe Buffer Preserve has skullcap, spurge, butterwort. Actual costs of acquiring land by purchase or protecting it through conservation easements is NOT included here. This is an ongoing action. To date, about nine protected P. ionantha populations have been secured: one population on the St. Joseph Buffer Preserve (SJBP), Gulf County; one population at Lathrop Bayou, Bay County; one population (but potentially extirpated) at Box-R Wildlife Management Area (Box-R WMA), Franklin County; and seven populations at Tate?s Hell State Forest, Franklin County. 10 protected populations of M. alba have been

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										secured: two populations on the St. Joseph Buffer Preserve (SJBP), Gulf County; one population at Lathrop Bayou, Bay County; one population at Box-R Wildlife Management Area (Box-R WMA), Franklin County; and six populations at Tate?s Hell State Forest, Franklin County. For S. floridana, 7 protected populations have been secured: three populations on the St. Joseph Bay State Buffer Preserve (SJBSBP), Gulf County; one population at Lathrop Bayou, Bay County; and three populations at Tate?s Hell State Forest (THSF), Franklin County. These are public lands and therefore, protected under the Endangered Species Act. To date, six protected populations have been secured for telephus spurge: four populations on the St. Joseph Buffer Preserve (Gulf County), and the North Glades and the Breakfast Point Mitigation Bank (BPMB) populations (Bay County).

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Godfrey's butterwort (Pinguicula ionantha), Florida skullcap (Scutellaria floridana), White birds-in-a-nest (Macbridea alba)	2	3.2	Develop management plans for protected sites outside AN	Ongoing Current	FY 2005		U.S. Fish and Wildlife Service, Private landowners, Florida Department of Agriculture and Consumer Services, including Forestry Division, Contractor, Landowners and Managers	Management: Planning	Contract	Some of the public and private lands contain mgt plans per either their requirements as public lands or within easements, or result of consultation requirement. Management plans for P. ionantha have been developed and implemented by the: Florida Fish and Wildlife Conservation Commission (FWCC) for the Box-R Wildlife Management Area (Box-R WMA) (FWCC 2006); Bureau of Land Management (BLM) & the St. Joe Timberland Company (Timberland Company) for the Lathrop Bayou (BLM 2008). For M. alba, management plans have been developed and implemented by the: Florida Fish and Wildlife Conservation Commission (FWCC) for the Box-R Wildlife Management Area (Box-R WMA) (FWCC 2006); Bureau of Land Management (BLM) and the St. Joe Timberland Company (Timberland Company) for the Lathrop Bayou (BLM 2003). For S. floridana, management plans have been developed and implemented by

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										the: 1) Bureau of Land Management (BLM) and the St. Joe Timberland Company (Timberland Company) for the Lathrop Bayou (BLM 2003), and 2) Florida Department of Environmental Protection for the SJBSBP. Recently, the Plant Conservation Program of the Florida Division of Forestry provided management recommendations, i.e., application of prescribed fire, to assist THSF land managers in prioritizing stands that contain federally threatened plant species
Godfrey's butterwort (Pinguicula ionantha), Florida skullcap (Scutellaria floridana), White birds-in-a-nest (Macbridea alba), Telephus spurge (Euphorbia telephioides)	2	3.3	Implement management and monitoring for protected sites outside ANF	Ongoing Current	Prior to FY 1995		Private landowners, Universities, Florida Department of Environmental Protection, Florida Department of Agriculture and Consumer Services, including Forestry Division, Landowners and Managers	Management: General	Labor type not yet selected	Regular mgt occurs on Tates Hell, St Joe Buffer Preserve, St Joe lands in RGP, Brenda Wards property. No formal monitoring plans are in place that we are aware.
White birds-in-a-nest (Macbridea alba)	3	4.1	Macbridea genetic study	Complete	FY 2000 - FY 2004	FY 2000 - FY 2004	U.S. Fish and Wildlife Service, Universities	Research: Genetics	Graduate Student	10 populations with an average sample size of 47 plants were analyzed by gel electrophoresis. Of the 22 loci analyzed, 11 were polymorphic. Compared to other mints, M. alba is genetically depauperate.

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White birds-in-a-nest (Macbridea alba)	1	4.2	Comparison of 2 species of Macbridea	Partially Complete	Prior to FY 1995		U.S. Fish and Wildlife Service, Universities	Research: Genetics	Graduate Student, Species Expert	Cantino (1985) studied the chromosomes of these 2 species. The study between the two species of Macbridea indicated that they have the same ploidy level, i.e., 2n=18, with nearly identical chromosome length range (2.5-4 µm in M. alba and 2.5 - 4 µm in M. caroliniana). Other genetic studies will be prioritized and funded under conservation measures for the candidate species Macbridea caroliniana. Katherine Farrah Weeks (graduate student) and supervisor, Joan Walker, were conducting a genetic study using allozyme data for M caroliniana (2009 Doctoral thesis- Population ecology of the floodplain herb Macbridea caroliniana (Lamiaceae) with investigations on the species' habitat, breeding system and genetic diversity)

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Godfrey's butterwort (Pinguicula ionantha), Florida skullcap (Scutellaria floridana), White birds-in-a-nest (Macbridea alba), Telephus spurge (Euphorbia telephioides)	3	5	Garden propagation and reintroduction	Ongoing Current	FY 2006	FY 2008	Botanical Gardens, U.S. Fish and Wildlife Service, Center for Plant Conservation	Research: Propagation	Labor type not yet selected	Ping is sold on open market. Contract with Historic Bok Tower initiated FY 06 for ex situ research and protection on spurge, skullcap, and butterwort. Birds in a nest already held in ex situ by HBok Sanctuary. Tested transplant occur with minimization measures on St Joe lands into conservation easement area with minimal success to date (drought in spring fy 2006 may be reason not more successful). Although conserving M. alba in-situ is the best option, an ex-situ collection of established seedlings and adults is recommended. Dr. Brenda Molano-Flores (Illinois Natural History Survey, Champaign, IL) and collaborators will be investigating seed germination requirements.